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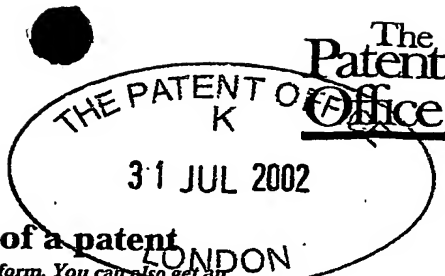
Stephen Hordley

Dated

1 September 2003

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An Executive Agency of the Department of Trade and Industry



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P01/7700 0.00-0217734.3

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP9 1RH

1. Your reference

ABC/20903

2. Patent number

0217734.3

31 JUL 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

PBT (IP) Limited

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

1 Astra Centre
Edinburgh Way
Harlow
Essex
CM20 2BN

7645336001

4. Title of the invention

Reversing Linkage

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

A A Thornton & Co
235 High Holborn
London
WC1V 7LE

Patents ADP number (if you know it)

75001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

yes

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

3 ✓

Claim(s)

Abstract

Drawing(s)

1 + 1 ✓

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

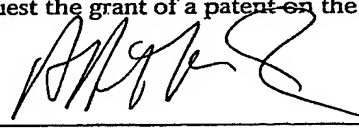
Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents ..
(please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature



Date

31 July 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Andrew B Crawford - 020 7405 4044

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Notes

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- d) If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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REVERSING LINKAGE

The present invention relates to a reversing linkage and more particularly to an electrically controlled reversing linkage. By a reversing linkage we mean a linkage in which input motion in a first direction will result in output motion in either the first direction or a second opposite direction.

It is an object of the present invention to provide a reversing linkage which is simple to construct, reliable in operation and can be readily controlled.

Such a linkage has a large variety of uses and, for example, could be used in the high speed yarn transfer system disclosed in our earlier co-pending UK Application No 0122406.2 or in the lock mechanism disclosed in our earlier co-pending UK Application No 0208508.2.

In order that the present invention be more readily understood, an embodiment thereof will now be described by way of example with reference to the accompanying drawings, in which:-

Fig 1 is an exploded perspective view of a reversing linkage according to the present invention;

Fig 2 is a front view of the linkage of Fig 1 in a first condition;

Fig 3 is a front view of the linkage of Fig 1 in a second condition; and

Fig 4 is a front view of the linkage of Fig1 in a third condition.

A preferred embodiment will now be described as a "smart" lock ie one which requires both mechanical and electrical actuation before it will operate. This is but

one use of the linkage, which with minor alterations could be used for a number of purposes.

Referring now to Fig 1, this shows an exploded perspective view of a part of a door lock. It comprises a base member 10 provided with a base 11 which reviews a one end of barrel 12. The other end of the barrel is provided with an actuator pin 14 which is provided at a position which is radially offset from the axis of rotation of the barrel 12.

The pin 14 is received in a slot 16 in a link arm 17. The slot is positioned at a suitable location in the arm 17 depending on the design of the lock and the forces required but in this case it is generally, centrally located between two pins 18 and 19. In this case, the pin 19 is longer than the pin 18 but this need not be the case and will again depend on the exact design of the remainder of the lock.

The pins 18,19 on the link arm 17 are received in respective slots 20,21 in a free-plate 24 which is fixed of the base member 10. The slot 20 is provided with a cross-slot 22 whose purpose will be explained later.

Turning now to Fig 1, this shows the lock of Fig 1 in an assembled condition and the same reference numerals are used for the same part. Fig 2 shows the device at rest in its datum position with the pin 19 biased to the position shown by a spring between the pin 14 on the barrel 12 and the pin 19.

An electrically operated device such as a piezo electric actuator sits above the mechanism and is arranged such that it will cause insertion into and rejection from the cross-slot 22 of a blocking member . The member is a good fit into the cross-

slot 22 and interferes with its movement of the pin 18 away from its rest position as shown in Fig 2.

5 In Fig 3, again the same parts use the same reference numerals but here the barrel 12 has been rotated in a clockwise direction. This has caused the link arm 17 to pivot in a clockwise direction about the pin 19 which in turn has caused the pin 18 to rise in the slot 20 in view of the fact that there is no blocking member in the cross-slot 22. Thus, if the pin 19 is used as an output member for the lock, rotation of the barrel 12 has not resulted in any movement of the pin 19.

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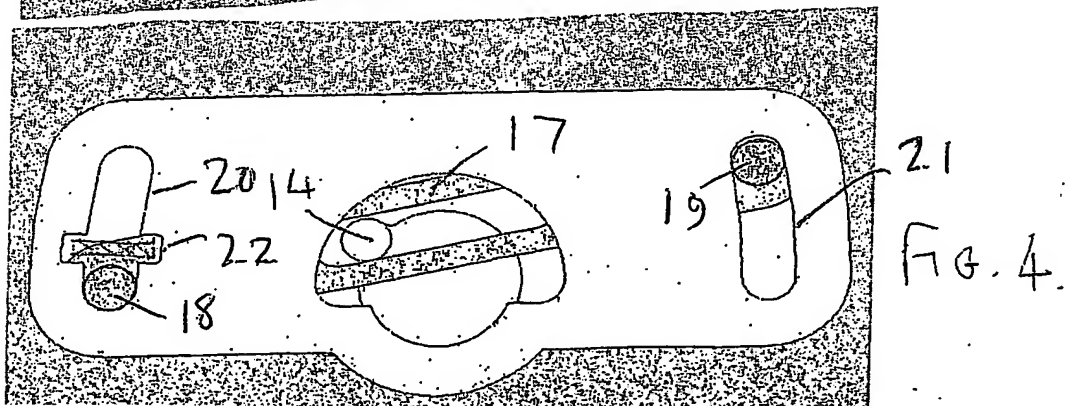
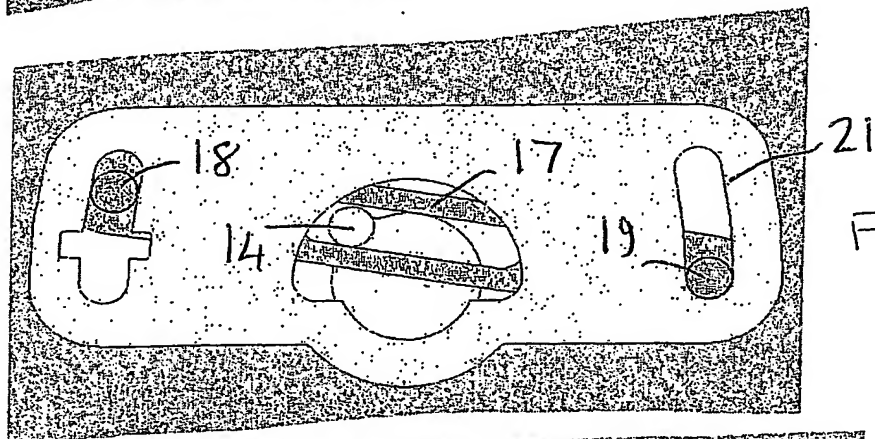
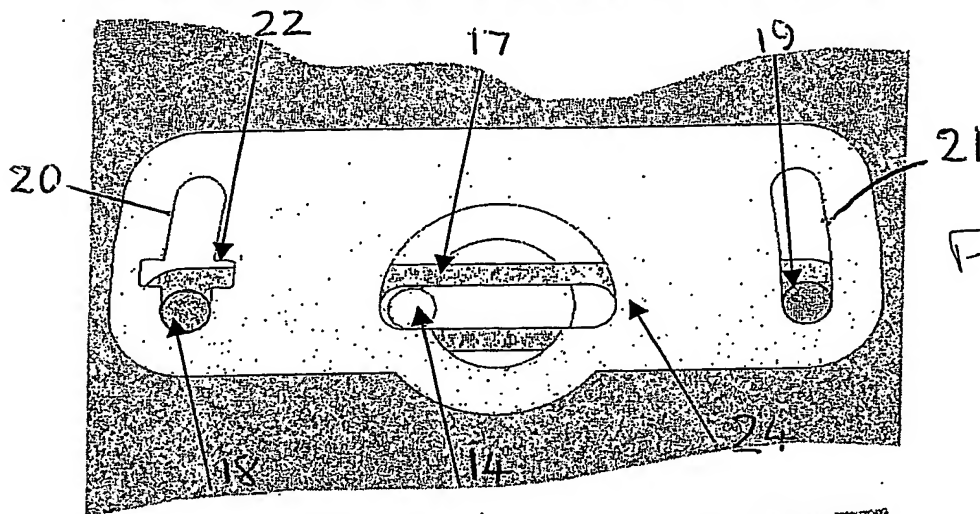
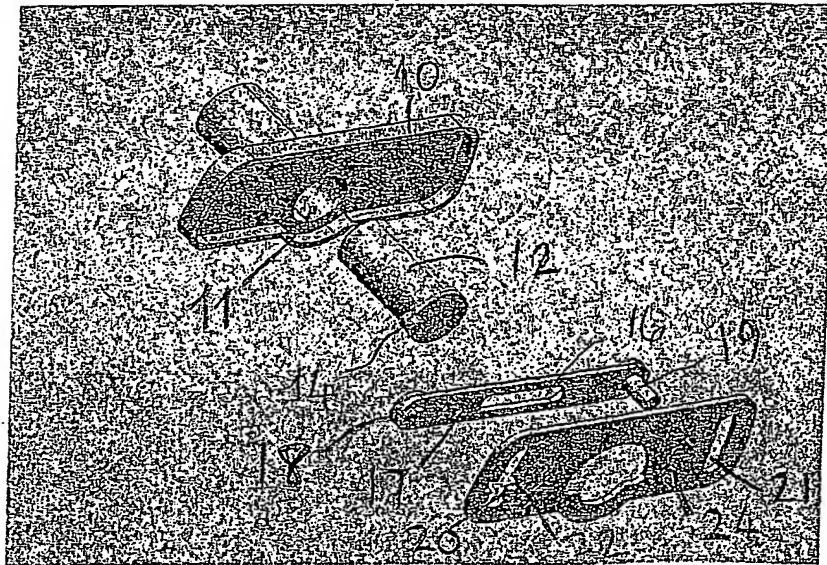
However, if the blocking member is present in the cross-slot 22, movement of the pin 18 in the slot 20 is inhibited and so rotation of the barrel 12 in a clockwise direction will result in the link arm being forced to pivot in an anti-clockwise direction to raise the pin 19 in the slot 21 as shown in Fig 4.

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It will be appreciated that various modifications may be made to the above mechanism. For example, the pin 18 as well as the pin 19 could be used as an output which would mean that motion in one direction of the barrel 12 could be translated into motion in one or other direction depending on the state of actuation of the electrically operated device. Also, the barrel could be replaced by a slider such as might be used in a locking bolt or by a cam that is connected to a key barrel thus providing a lock that requires both a mechanical key and an electronic signal to operated.

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